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20p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



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The Pearlscale

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Fishkeeping Without Power

'Preserving the health of livestock' is one of the Scheduled purposes for which electricity can be used according to the Electricity Control Order 1973. Economies should be effected wherever possible and ROY PINKS here reviews what can be done to combat the effects of interruption to power supply to aquaria

IN view of international developments it may or may not be true that the only sure cure for winter power-cuts is for all pay negotiations to be carried out in late spring, and it is apparently inevitable that for some time to come the long-suffering public will have to endure the results of seasonal stoppages. To what extent aquarists need to worry about their charges depends rather on the habits and location of both parties. The fishkeeper who is away from home will be at a disadvantage, particularly if there is no-one who can be relied upon to render first aid in the case of absence over a period of days. In such a situation it must be assumed that losses or total failure may be incurred with tropical tanks, especially marines, if the power cuts are prolonged and the tanks are situated in unheated rooms. Disease, accelerated by unfavourable living conditions for the fish, is virtually a certainty too. Some form of personal attendance therefore, is a necessity, at least for part of every day. Experience has shown that those who go out to work each day for most of the day can surmount all but the most drastic and prolonged cuts by thoughtful and timely planning.

A source of heat for the room is a prime consideration, and the safety-approved paraffin heaters

will come most readily to mind. Carry out some trials in the rooms affected before the trouble starts, and see how many heaters you need to keep the tank's vicinity between 65° and 70°F. Do this with the curtains drawn—on frosty days you would need to keep them so in order to conserve the available heat. If you can arrange for light-coloured, thinish curtains to be put up, so much the better, as a planted tank, in a continuously darkened room can develop trouble, particularly if there is overcrowding of fishes. Any light you can introduce to the room and to the plants in the tank during the day will therefore be beneficial. In theory you might consider turning night into day by completely blacking out by day and leaving the aquarium lights on at night, when, presumably the cuts will be of less severity.

Conservation of heat within tanks may be achieved most readily, again before the event, by cutting thick expanded polystyrene sheets to the size of the end, back and top panels of the tank (and the bottom, if it is on a stand and exposed to the air). Cement these to the glass and leave them there for the duration of the emergency. For the front panel cut out a sheet of thin polystyrene sheeting; this is for clipping into place at the beginning of each cut or, for the person away from

home each day, for insertion just before departure, and removal on return home or after the end of the power-cut in force at the time. The thinness of this sheet will allow a certain amount of available light to penetrate into the tank without impairing its heat-retaining properties. Polystyrene sheeting should all be of the fire-resistant type, as there is a version which is flammable and extremely dangerous in the viscous form which it assumes under fire conditions, so verify your purchase with the retailer at the time when it is bought. *On no account leave the switches for aquarium lights in the on position if you are using any top covering for your tank*—some aquarists use blankets to conserve heat. These, like polystyrene, can prove to be high fire risks from accumulated heat or possible wiring failures.

Given the above-mentioned precautions, the gradual heat losses from the tank, which will occur during power-cuts, will generally not prove to be too serious. Those who wish to add heat to a tank during an 'off' period may boil a kettle on a Primus or similar stove and either add the hot water, heavily diluted with tank water, in small quantities, or alternatively decant the hot water into a shatterproof jug which can then be floated in the tank water to form a sort of mobile radiator.

Heat is probably less difficult to sustain than air supplies, and those with tanks relying heavily on undergravel filtration will be in the poorest relative situation of all. It must be remembered that a good source of air is necessary to drive an undergravel filter properly, and gentle bubbling is only a gesture. I know of no battery-driven air pump capable of delivering anything more than gentle aeration, and I shall once more resurrect the bicycle-pump device I have used on several occasions. This consisted of fitting to a bicycle pump the type of adaptor used for blowing up footballs. If you then take a plastic tee piece (the sort that comes in two pieces) and remove the shorter stem, it will be discovered that this acts as a snugly fitting bridge between the football adaptor output and the input end of your airline tubing. You have to pump by hand, of course, but the result is as good or better than the normal performance from your pump. I am unable to say how often you need to operate this sort of device, as much depends on the type of tank you have and whether it is overcrowded or not. During the last crisis I managed usually to operate the thing for about 5 minutes every 30 minutes or so, but this ultimately dropped to hourly or less-frequent performances, and I sustained no serious losses in the two marine tanks and three freshwater tanks served.

The actual need for air will depend on the carrying capacity of the tank, and if it is over-

It is regretted that owing to 'fuel crisis' production difficulties this month's issue is reduced in size and some regular features have had to be shortened or held over

crowded or nearly so, it is worth considering whether you can distribute your fishes more equitably within the overall confines of your collection. Consider, too, whether you can press into duty any tanks temporarily lying fallow, to relieve the competition for available oxygen. Large inner tubes or air mattresses can be filled with air and coupled up to your airline, with the input throttled well down, and this will materially help in the case of an overcrowded freshwater tank, though I am less convinced of their value to marines. Feeding should be reduced to an absolute minimum, and live offerings should be given whenever possible. To avoid pollution, all waste food should be removed promptly, especially in saltwater aquaria. There are now some very good vitamin preparations on the market, and it would seem that they might well supply a need during periods of restricted feeding, though of course the dosage should not be exceeded.

Despite the state of unpreparedness of many fishkeepers during the time of the last power cuts, the actual losses sustained were, I believe, much less than had been feared. This was no doubt due in some way to the exceptionally mild weather which prevailed, and we have no right to expect such leniency whenever trouble strikes, so it is up to all of us to get our systems into the first state of readiness right now. Throughout, watch for disease most carefully and treat suspicious symptoms promptly. During bad times your fish will have been weakened by the degraded conditions to which they have been subjected, and some may die, but I hope these will be the exception.

At all costs do not use any form of paraffin heating which has not been approved for domestic use. Some greenhouse heaters, for example, are unsuitable, as they are prone to being knocked over, and the non-blue-flame type can emit sooty clouds which will ruin your home and smother your fish. Make sure that your emergency heating equipment is in safe working order, and that it is regularly replenished with fuel. Since there are some who would have benefitted from the advice, I would also add that paraffin heaters go out if you add water to them and blow up if you add petrol, hence all fuel containers should be unmistakably labelled and no fuel should ever be used if there is the slightest doubt as to what it actually is.

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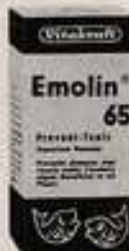
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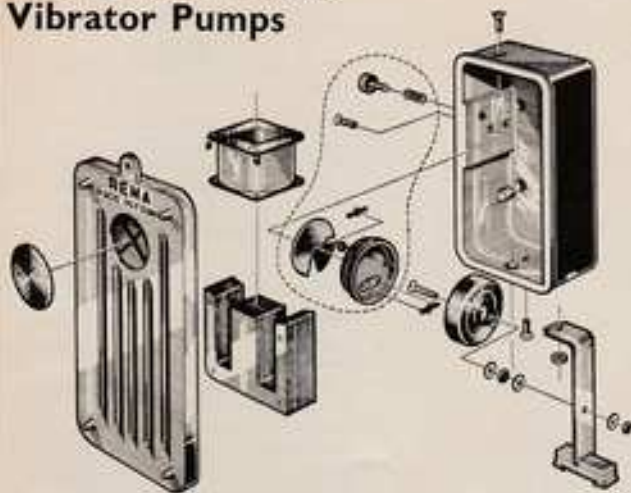
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Aquarist in Thailand

An aquarium-keeper's Paradise

By LADDA TONGSOOK

Photographs by the author

I NEVER cease to marvel, when I pick up the latest 1974, at the elaborate care which the English aquarist takes of his fishes, his equipment and his fishes' food, especially with the approach of winter when even coldwater fish have to be coddled.

It's so different here. You don't have to worry about heaters—well, some aquarists may put a 50-watt heater in a large discus tank when our December-February 'winter' strikes and early morning temperatures may, for a few days, drop to the chilly seventies. But, usually, aquarium water stays in the 78-82°F range from sheer ambience.

Nor do we have to worry about freeze-dried live foods, or dry foods which will float, because in every suburban shopping centre in Bangkok there will be one, two or three tiny shops with great tubs of mosquito larvae and frequently water fleas, bloodworms and, occasionally, tubifex—all alive-bo. There is often on sale, too, the large larvae of the filth mosquito (*Aedes*). And, if you must have dry food, dried prawns are part of the Thai diet and your maid will efficiently smash them up for you in her pestle and mortar (essential equipment in every Thai kitchen).

Because Thai labour is deft and still low in cost, aquaria are good and cheap, and here we have a feature I see nowhere else—an aquarium cover raised about a quarter of an inch by built-in metal angles at the corners so that air can get in, fish can't get out and there are no condensation worries. I guess this is another facet of our high ambient temperatures: in cooler climes one couldn't afford the heat losses from high-rise lids.

And, as for fishes, you can raise any tropical fish, by definition, in a tropical country. In fact, if you go back to old reference texts like Innes' *ENTIRE AQUARIUM FISHERY*, and don't count those myriads of never-available fancy African fishes, then at least 60% of tropical fishes come from Thailand. Don't be misled—and this makes me mad—by the fact that text-books note the range of many far-eastern fishes as 'India and Indonesia'; in fact, India and Indonesia are only the extremes of the radial occurrence of the fish. This central blind-spot is, of course, due to the diligence of early British and Dutch ichthyologists—such is the history of the world.

Thailand has a large range of the cyprinids, the rabobas and the loaches, the silurids and the clariids, the anabantids and the gobies. It has



Siamese fighting fish on display can still draw the crowds in their homeland. In Bangkok's weekend market both aquarium-bred specimens of fighters, and those caught in the rice paddies are offered for sale. The wild specimens are used to breed new vigour into waning aquarium strains.



Rabbits and gourama will swim in on the generally-inundated landscape of the rainy season. The drive-way of the author's home after a tropical down-pour shows how flooding provides a means of filling pools.

more than its share of 'odd-balls' such as the feather fin (*Notopterus*), spiny eels (*Macropodus*), the archers, the algae-eating catfish, the half-beaks and pipefishes. Much sought after are the red-tail shark, the climbing perch, the tinfoil barb, the silver shark (*Balantiocheilus melanopterus*), the Siamese fighters, and the very rare *Osteoglossum formosanum*, which is even more beautiful than its South American cousin, the arowana.

There is a saying, so my Australian husband tells me, that 'a prophet has no honour in his own land'. And so it is with Thai fishes. The most expensive fishes commonly available here are discus and oscars, both of South American origin but now frequently bred here. I wonder if I should say oscars are really exotic, because it was a Thai,

Mr Charoen Pattabongse, who gave the world the first red oscar. You can buy *Lepomis*, headstanders, tailstanders and elephant noses here and, until recently, piranhas, when their import was wisely banned.

Where do you buy fishes in Bangkok? Well, there are the usual tropical fish dealers scattered throughout the Metropolis, but by far the most interesting source is the so-called Week-end Market at the Pramaine Ground. Here, among a thousand or more stalls selling everything from a needle to an anchor, are about 20 stalls selling tropical fishes, aquaria and the accoutrements therefore. Here, because the stalls are all check-by-jowl, you can bargain keenly, a necessary part of Thai shopping.



In the food section of the Bangkok market, aquarium specimens can be picked from the trays where they are kept alive although destined for the table. Thailand's annual catch of *clarias* catfish is officially 20,000 tons although annual consumption must be many times this amount. The 'Siamese shark' *Pangasius pangasius* is commonly raised in ponds for human consumption.

Awnings are hoisted above this aquatic dealer's stall in Bangkok's week-end market as protection against sun as well as rain. In this market a thousand stalls mushroom into existence on Friday evenings and by dusk on Sunday the site has reverted to vacant parkland.



And if you can't find the fishes you want in the aquarium department you can move on to the much more extensive food section, where the climbing perch, the clarias catfish and the snakehead are displayed, still wriggling, in trays, but destined for the table.

In Thailand, in fact, you needn't bother to buy any fishes or any equipment at all. All you need do is to have your gardener dig a pond; the rains will fill it and fishes will arrive as if by magic. Rasboras and goarummies will swim in on the generally-inundated landscape of the rainy season. The climbing perch will make it in any season, wet or dry, but is just as likely to walk off again!

An unwelcome guest will be the snakehead

(*Ophiocephalus striatus*), which, likewise, will come at any season but will not arrive by swimming or walking, but by burrowing through the subterranean mud. You must act quickly when he comes because, with large mouth and voracious appetite, he will soon gobble up all the pretty little fishes you have come to cherish. So you buy some derris root at the Chinese shop, pound it and pour the milky latex into your pond, thus jeopardising the lives of all its inmates. But if you act quickly enough you can salvage the stupefied little fishes by dumping them in freshwater to revive while the jolly and murderous old snakehead can be served with sauce, mercifully without ever having recovered from the anaesthetic!

Book REVIEW

MARINE AQUARIUM KEEPING by Stephen Spotts. 171 pages, 23 drawings, 80 photographs. John Wiley & Sons, New York, £5.00.

"THE water, you see, is everything. It's as simple as that". Thus Stephen Spotts, American professional aquarium curator, concludes the Preface to his latest book to emphasise that in marine aquarium-keeping especially it is the skill of the aquarist in maintaining a satisfactory state of the sea water in his tanks that determines the degree of his success. Although the author does not in fact pretend that this is child's play he does everything possible to show that it's not impossibly difficult

either. He is highly practical and very readable; his technical approach to the subject is in parts undoubtedly not everyone's cup of tea, but for those who want to know why certain procedures are advocated and who appreciate the need for discussing, say, the 'turnover rate' of a filter in terms of its practical measurement and the actual values in gallons per minute per square foot of water surface, this book can be highly recommended.

The two main sections of the book consist of chapters involved with the section headings 'The Science' and 'The Animals', well illustrated with photographs and line drawings. Eight pages in full

colour are included. There is also a third section of 20 pages called 'The Art', and in this there are full instructions for making moulded fibreglass duplicates of corals for use in the tank or its diorama background, a technique used in public aquarium displays.

SEA OF THE WORLD: JAPANESE COLoured CARP by Dr Herbert R. Axelrod. T.F.H. Publications Inc. Ltd., Hong Kong, £8.50.

THERE should be a law against books like this one. Heaven only knows how many homes will literally be wrecked as koi enthusiasts, driven to heights of fanaticism by the book's photographs of superb carp and beautiful ornamental ponds

—and, it must be said, spurred on by the author's invitation to his readers to copy the Hawaiian and Japanese home scenes, shovel tons of earth from gardens and from beneath their houses to make way for thousands of gallons of water to fill with delightful, cavorting colourful koi. There's even an indoor pond and rock garden (181 square feet) pictured, that will surely put in jeopardy the future of many a proud suburban housewife's sitting room or lounge. And, with this book's revelation that, in relation to koi shows in Japan, '... the hobby of koi-keeping is not a small, disorganised leisure-time activity. It is a serious, cut-throat business with millions of dollars involved every year...' can there not be foreseen yet further disruptions in

the lives of thousands as koi-keeping fever sweeps the continents?

KOI OF THE WORLD is a book of large format (12½ in. by 9½ in.), so that the colour pictures with which most of its 230 pages are so generously endowed have been given full scope. The impressive beauty of the koi varieties comes out well from such really large reproductions. The book is one the koi enthusiast is bound to buy, beg or borrow on sight.

STARTING WITH TROPICAL FISH by José and John Thorne. 56 pages. Illustrated. The Aquarium Press, London. 85p.

A HELPFUL little book for the beginner by two practical aquarists,

describing the equipment required, setting up a tank, and common tropical fishes. There are some blemishes, such as careless misspellings, one of which ('aquafavin') is most unhelpful if a reader were to try to procure the substance, and some misunderstandings—such as the authors' beliefs that 'the term "live-bearer" is still a subject of much biological discussion', that phenoxetol is an antibiotic and, most surprisingly, that (of white spot disease) 'the main cause of this disease is a sudden drop in temperature'. In general, the illustrations are clear and useful ones although it's certain that whoever made up the caption to the one on page 3 did not understand what the diagram purports to show!

A.E.

Aquarium-keeping in Dutch Homes

Review of Hendon Congress lecture by Mr W. A. Tomey

'ONE of the very best' was the rating of the 1973 Hendon Congress, and following is an account of some of the highlights based on notes by Mr Henry White of HENDON & DAS of this most interesting occasion. 'We knew that Mr Tomey was a professional lecturer; we knew his English was good—and after seeing just a few of his slides we knew that his material was of the highest order. For the first half of the evening, Mr Tomey described and featured some magnificent aquariums in the homes of Dutch aquarists, impressive not only for their size and construction, of which one was described in detail, but for the amazing display of plants. Starting by comparing a modern office with steel furniture with the decor in an old-fashioned home, Mr Tomey stressed the importance of designing the aquarium to fit in with the surroundings. The lighting used was very intensive. The tank under construction incorporated four tubes and five lamps in the hood with reflectors to obtain maximum efficiency. The duration of the lighting would be from 8.30 in the morning to 7.30 at night (and in order to prevent discomfort to fishes, such as *Anostomus anostomus*, that preferred to hide in darker corners great care was given

to the design of the tank furnishing. Generally the substrate was composed of unwashed gravel, peat and clay covered with washed gravel. Base heating was included; under-gravel filters were thought by many Dutch aquarists to be essential equipment, others preferred not to use them. Temperature, based on fish requirements, was quoted as 82–91°F (28–33°C).

The plants were chosen with enormous care, and one tank illustrated contained only plants grown from cuttings received from fellow club members. Leaf coloration and shape were carefully considered and great use was made of wood as a base for plants like Java fern. To keep the tanks looking superb and the overall pattern maintained the plants had to be shortened and pruned every 7 to 14 days and 6 in. of water replaced. The tanks were stripped down every 2 years and the substrate was replaced.

In the second half of the programme Mr Tomey described the 'dry filter' that had been featured in PFM in the November, 1973, issue. Then on to further magnificent slides of fishes. After seeing a shot of *Amphiprion percula* it was interesting to learn that German aquarists were breeding some six species of clowns.

It was also interesting to hear first-hand of the effect of a sting from a scorpion fish—not a pleasant experience apparently. At one stage Mr Tomey, stressing that most South American fishes live on insects, was surprised to learn, by direct questioning of the audience, how few cultivated fruit flies and Grindal worms. Mr Tomey's own fruit fly culture, we learnt later, was 16 years old, and was kept in constant use supplying food for his poisonous tree frogs from Central and South America. The slides of these fantastically coloured frogs were very popular; night frogs with huge red eyes, and an excellent shot of one attached to a sheet of glass, showed the suckers on its feet. When Mr Tomey showed us his finest picture, of the tongue of a frog in action, spontaneous applause came from the audience. The camera used is a Hasselbach producing 2½ in. by 2½ in. slides, shown with the latest Rollei Projector, capable of zooming. Mrs Tomey did the excellent job of projecting the slides—the very first time the lecturer did not have to ask for the picture to be focused just a little sharper.

Before the Convention opened, and in the interval, guests had a variety of exhibits to view—Hen-

don's own stand featuring characins, stands from BASS, the Catfish Association, and trade stands. Mr White continues: 'All this gave added interest but above all the

Convention is where old friends meet and talk about fish, where new members of the hobby can come face to face with the experts and ask that searching question of some of

the many hobby personalities present, such as the first president of BASS, the chairman and vice-chairman of the FBAS, the BKA chairman and the Editor of PETFISH MONTHLY.'

First Scientific Evaluation of Chloramine T in the

Treatment of White Spot Disease

ALTHOUGH it is some years since the medical antiseptic known by the common name chloramine T (chemical name sodium paratoluene sulphonchloramide) was first marketed in Europe for the use of aquarists to cure white spot disease, the first scientific evaluation of its effectiveness has only just been reported.

Harlequins (*Rasbora heteromorpha*) and roach (*Rutilus rutilus*) with the infestation were the test fishes used in this work, undertaken by Dr D. G. Cross and Dr P. A. Hursey at the Salmon and Freshwater Fisheries Laboratory of the Ministry of Agriculture, Fisheries and Food. A review by Dr Cross in 1972 of methods of treating white spot disease (reprinted in 1974, October 1972) indicated that chloramine T was a useful agent for fish treatment provided that effects of water reaction (pH) and water hardness on it are taken into consideration. Accordingly the latest work reported has carefully examined how chloramine T acts in soft and hard waters of various pH values (acid, pH 6.0, to alkaline, pH 8.0).

Chloramine T produces its action on the free-swimming white spot parasite by the production from the solid, when it is dissolved in water, of hypochlorous acid, a weak acid which as well as killing parasites is also harmful to fish above a certain concentration. The acid arising from the chloramine T is more stable in acid water than in alkaline water, and this probably explains the finding that chloramine T is more active against the parasites (and also more toxic to fish) in acid than in alkaline water.

From trials with various concentrations the 'therapeutic dose' for infested harlequins and roach, that is the dose that will kill the parasites without harming the fish, was worked out under various conditions of water hardness and pH. The findings are summarised in the table, taken from Cross & Hursey's paper in the *JOURNAL OF FISHERIES BIOLOGY* (1973, 5, pp. 789-798).

The recommended procedure for treatment of

static water aquaria with chloramine T is as follows:

1. Siphon out all mulm, sediment etc. from the tank.
2. Turn off any filtration equipment in use but provide gentle aeration, particularly for planted aquaria.
3. Add the required amount of the chloramine T to the water (according to pH and hardness) after dissolving the solid in a little of the tank water first.
4. Repeat the addition of the dose once a day until the fish seem to be clear. For tanks kept at 25°C (77°F) this will be about 3 days; for coldwater fishes longer periods are necessary (about 3 weeks at 50°F (10°C)). Half the water in an aquarium should be replaced with fresh water once every week the treatment is being applied.

Water pH	Dose of Chloramine T [mg/litre (mg/gallon)]	
	Soft water	Hard water
6.0	2.5 (11)	7 (32)
6.5	5.0 (23)	10 (45)
7.0	10.0 (45)	15 (68)
7.5	18.0 (81)	18 (81)
8.0	20.0 (90)	20 (90)

Values in parentheses are the doses in milligrams per Imperial gallon.

In the work quoted this treatment has been applied successfully to species of tropical and coldwater fishes other than the two (harlequins and roach) selected for establishment of the therapeutic dose. Additionally, tests were made of the effects of the presence of the metals mild steel and lead, in view of past statements that bare metals accentuated the toxicity of chloramine T, but no

significant change with these metals present was found.

Since chloramine T is decomposed in water it is necessary to keep the solid, and any tablets made

from it, perfectly dry to preserve the efficacy; it is clear that the moist air of a fish room or fish house is not the best environment in which to store this particular remedy.



by
ARPEE

Personal COMMENT

A problem often encountered in the freshwater aquarium is the build-up of unwanted algae, especially in those places one wishes most to keep clean. We see hairy growths appearing daily all over the leaves of our most precious plants, from whence it is most difficult to dislodge them, whilst the tank glass, comparatively easy to keep clear, remains virtually unsullied. There is, of course, lots of misspent hysteria over the undesirability of algae, and it should not be assumed that it is an unmitigated evil. At all costs one should avoid the usually quite erroneous notion that green water is in some way unwholesome or unhealthy, 'stagnant' etc. It is quite true that some green water or even clear water containing anchored algae may be evil-smelling, but this condition arises from decomposition, not from the growth of the millions of plant cells which is what algae are. How often have I heard parents refusing to allow their offspring to keep fish because they equate them with green water and equate this again with intolerable effluvia. Even in this day and age learning seems to have progressed slowly in matters such as these.

The young aspirant to fishkeeping may therefore be advised to counter any such old wives' tales with the simple statement that even if green water does come it can be defeated readily enough without the nostrils ever having been aware that any problem existed. It is quite true that the most sinister forms of algae—the free swimming types—can be rather difficult to remove. Their growth arises because of too much light, and if you are unable to re-site your tank or to shade it in a suitably aesthetic way, it can remain something of a problem. Other, anchored, forms are another matter altogether, and may be disposed of either by introducing fish, or other creatures which appreciate some vegetable matter in their diet, or by manual removal.

The latter method is particularly appropriate for the tank glass and for internal tank fittings, but great care must be observed if any attempt is made to remove algae from plant leaves, because even slight over-enthusiasm can result in irreparably damaged surfaces. This is especially so for fine-leaved plants like *Myriophyllum* and *Cabomba*, but the *Echinodorus* and *Cryptocoryne* species, usually regarded as inviolable, need nearly as careful treatment. It is worth a little thought whether other methods could be applied before resorting to what could be unnecessarily drastic counter measures.

Obviously, fish may straightaway come to our rescue, and it will be found that very many more fishes eat algae than do not, so whatever you keep in your tank, some relief will be provided by the fishes themselves provided that you avoid cramming them from nose to tail with flake food, worms and every other sort of tit-bit designed to distract them from what could be a most useful job of work. Most fishes are overfed, grossly or otherwise, and in these conditions algae will certainly build up, often to embarrassing proportions. The *Otocinclus*, the sharks and most of the live-bearers are regular algae-eaters, but watch other fishes nibbling away at the young filamentous growths on plant leaves, and you will add lots more names to your list of allies in this particular engagement.

If you wish to protect certain parts of your tank from algae growths you may find it possible to arrange for rock or cork bark outcrops to overhang the affected areas, assuming, of course, that the offending light source comes from above. Similar manipulation of floating plants, especially of *Riccia*, will enable selective shading to be carried out, though this is usually at the risk of the floating plants, which themselves become inextricably involved with algae and sometimes perish in the process. It is a good idea to net out all your *Riccia* from time to time and subject it to a strong jet of water from the coldwater tap. If this is applied effectively, keeping the *Riccia* in the net all the time, a new lease of life for this delightful plant will have been achieved.

On the whole, I would rather have a tank with algae than without it, and I am sure my fish would go along with this. The application of chemicals is a foolish practice and a waste of your money; use your head to solve the algae problem, not some unspecified liquid from a bottle.

COLDWATER SCENE



By FRANK W. ORME

IN an article that appeared sometime ago (in the July, 1971 issue of *PFM*) I described my home-made food, which I use for feeding my fancy goldfish. Over the months I have endeavoured to improve upon the original well-tried recipe and have now arrived at the stage where the food is eagerly accepted by most coldwater fish, firm steady growth is maintained and very little clouding of the water arises, provided, of course, that the fish are not overfed. As a number of readers appear either to have missed, or to have mislaid, the recipe which was given at that time, this month I shall commence by giving instructions for the preparation of this mash.

Although virtually any meat can be used, I find that the simplest method is to purchase a can of dog meat. The size of can selected is dependent upon both the number of fish to be fed and the storage facilities which you have available; a deep-freezer allows a year's supply to be made and kept until required. For the purpose of this recipe instructions will be based upon the small-size can of dog food, from which the requirements for a larger supply can be worked out.

Apart from the can of meat the following ingredients will be needed: a packet of Bemax, or similar wheat-germ product such as the cheaper, but equally good, *Fromax*; a small quantity of calcium carbonate; a packet of *Vetzyme* tablets; a jar of honey; a packet of pure gelatin crystals. These items should all be obtainable from either your local chemist or *Boots Drug Store*. In addition you will require cheese, roughly equal in bulk to the dog meat, a medium-size carrot, three or four sprouts or equivalent amount of other green vegetable, and an egg.

Start to prepare the food by straining off the liquid from the canned meat, but do not throw it away. Mince the meat as fine as possible, and grind up the cheese and brussels sprouts together with the carrot. Place the mixture in a saucepan and add the previously strained liquid, if necessary adding some water so that the ingredients are just covered. Simmer the saucepan's contents over a low heat, whilst stirring to prevent the food sticking or burning, until the cheese has melted and the whole has blended together. Remove the saucepan from the heat and stir in

Coldwater Fish Food Supplies the Aquarist can Make in Bulk

a teaspoonful of honey, two tablespoonsful of calcium carbonate and two crushed *Vetzyme* tablets. Crack in the egg and beat the mixture until everything is thoroughly mixed together. Next add the wheat-germ product, which should be blended in until the mixture becomes a thickish doughy 'pudding'. Finally take half a cup of boiling water, mix in two full teaspoonful of gelatin crystals and pour this straight into the 'pudding' and mix thoroughly. The food must now be put into suitable containers, whilst still hot, and allowed to cool.

When it has set it will have a slight rubbery texture. The food can then be placed either in the refrigerator or a deep-freezer, where it will keep indefinitely. Alternatively the food can be forced through a 1/4 in. sieve, to form long 'worms', and slowly dried in a warm oven, after which it can be broken to size and stored in close-stoppered jars.

* * *

Over the past months I have been testing a food which I have found quite satisfactory and can fully recommend as a suitable diet for coldwater fish. Manufactured by *Quaker Oats Ltd*, it is a new form of dog food known as *Minced Morsels* and has been extensively advertised on T.V. by *Clement Freud and Henry*, his bloodhound. Packed in cellophan bags, the food is in short moist worm-like lengths and will keep, without any special conditions, for a long time without any visible signs of deterioration or drying out. When left for a period of 48 hours in water I found that no 'furriness' had developed and when offered to a fish it was accepted without hesitation. The food is produced from soya, meat by-products, sucrose, stabilised animal fat, preservative, minerals, stabiliser, vitamins and colouring and the analysis reads: moisture, 25.0%; dry matter, 75.0% (made up as protein, 19.0%, fat, 9.0%, fibre, 2.5%, mineral matter, 5.0%, sodium chloride 0.78%, calcium, 0.8%, phosphorus, 0.8%; gross calories, 1,400 kcal./lb. The vitamins comprise A, D and E, thiamine, riboflavin, pyridoxine, calcium pantothenate, choline chloride, niacin and B₁₂. Inorganic content includes calcium,

phosphorus, potassium, magnesium, iron, cobalt, copper, manganese, zinc and iodine.

Possibly a quote from a letter from the manufacturers replying to a query I had sent to them will serve to illustrate my approval of this product "... one of the government agencies in Scotland has contacted us in regard of the potential use of Minced Morsels in efforts to protect the salmon industry there. Evidently, one of the reasons for the suitability of Minced Morsels is its moisture content..." Where possible all food should preferably be fed in a moist state, rather than dry, for if the fishkeeper pauses to think he will realise that in Nature no fish eats food that is dry in the way that most pre-packed foods are dry.

* * *

The late Dr Myron Gordon of the New York Zoological Society devised a fish food now known as 'Gordon's Formula', which is made as follows. Pulp 1 lb. of raw ox liver, after first removing blood vessels and other stringy tissues, and place in a bowl with an equal amount of water. Add two teaspoons of non-iodised salt. Blend the mixture thoroughly and then strain it. To the mixture add 20 tablespoonsful of pre-cooked cereal baby food and mix this in well. Glass jars should then be filled with the food and placed uncovered in a saucepan of cold water, which must be brought slowly to the boil; lower the heat and allow the jars to stand in the simmering water for half an hour, after which the heat should be turned off and the food allowed to cool gradually until cold. When cold the jars can be covered and placed either in a refrigerator or deep-freezer until required.

There are many food formulae for coldwater fish—especially the fancy varieties of goldfish—that breeders have developed and which most treat as 'highly secret' recipes, the ingredients and methods of preparation being closely guarded from all enquiries. This, to my way of thinking, is a most ridiculous attitude to adopt.

* * *

Towards the end of the old year information reached me of a new specialist society that has been formed in the London area, with the title of the Association of Goldfish Breeders. One of the main aims of this group of goldfish fanciers is to unite all goldfish keepers in a common aim—unity within the hobby. They hope to arrange a meeting, at a future date, when the various problems that beset our hobby can be discussed and resolved in a friendly way, without the bickering and petty jealousies that have bedevilled similar

discussions in the past. From this they hope to find a basis that will result in a single set of National Goldfish Standards and Judging Rules that will be agreed and acceptable to all. I sincerely hope they are successful and achieve their aims.

At the moment the hobby is so fragmented and it seems that new standards are appearing faster than fish can be bred. Ours is the only hobby in which so much confusion exists, every other fancy, be it cats, dogs, cage birds, poultry or—you name it, has only one set of standards by which the show entries are judged. It is time that the goldfish keeper stopped behaving as aimlessly as his fish and learns to work with others for the common good and to the benefit of all.

For some time I have endeavoured, through various channels, to interest Midland goldfish keepers in forming a specialist society of people with similar interests, but the response has been very poor, and there does not appear to be any enthusiasm for such an association, even though it is only by the banding together of specialist groups that unity can be brought to the hobby.

Possibly the British Koi Keepers Society could be held up as an example. This national society has been in existence for only 3 years, and they have unity within their ranks, local groups are encouraged and formed. A Newsletter appears at regular intervals, in which members reveal their failures and successes with their fish. As experience is gained so it is made available to the whole Society membership. Although they do not have show standards I think that when the time comes for Koi Standards to be produced the same unity and commonsense will prevail and will result in a true National Standard that all koi-keepers will accept as the only standard by which their fish should be judged.

Amongst experienced goldfish breeders I have heard the view stated that they believe many will desert the ranks of goldfish keeping and go over to keeping koi. Some view this prospect with dismay. Unless the fancier of goldfish can achieve a sensible attitude to standards and clear up the existing confusion and mistrust then he will have no one but himself to blame for the sadly depleted ranks that remain.

If all fanciers, both novice and old hand, were to make their views known the numerous societies and federations might possibly come to their senses, swallow their pride and petty jealousies, and decide that enough confusion had been caused and that it was now time to scrap all existing standards and finalise a single set of National Standards and Judging Rules for Fancy Goldfish. Only by resolving the present ridiculous situation will the goldfish preserve its place within the aquarium hobby and attract and retain newcomers. With goodwill the solution can, and must, be found.

COMMUNICATION IN THE FISH WORLD

Pressure and Electrics in Communication

By IAN C. SELLICK

PRESSURE waves in water can give rise to one form of communication in the fish world. The majority of fishes are extremely sensitive to changes in pressure in the water, this sensitivity being a product of the lateral line, which in typical fishes is a canal under the scales containing special clusters of sensory cells called neuromasts. These cells are elongated, and each bears a projecting hair-like structure which is almost invariably

station accurately. This is done by constantly monitoring the local pressure situation—when swimming in a straight line this will be relatively constant within the school, but if a fish suddenly turns, or makes an unexpected movement, this will register as a difference in pressure to the other fish and they in turn may move with the lead fish as it turns towards food, or away from an enemy. This pressure detection is only supple-



A diagram of an enlarged view of a vertical slice through the skin of a teleost fish to show the lateral line canal (D). 1. Surface epithelium; 2. cupula, lying in the canal; 4. neuromast cells; 5. scale in section; 6. lateral line nerve fibres

covered with a gelatinous structure called a cupula, which waves freely in the fluid of the canal. The neuromasts respond to waves or disturbances in the water through movement of the cupula and consequent bending of the hair-like processes. The signals from the neuromasts will supplement vision by making the fish aware of moving objects—prey, enemies and even fixed obstructions which will cause local variations in the normal water pressure.

One important function of pressure sensitivity is in schooling fishes, which need to maintain

mentary to vision, the latter being used to check that the fish is entering the right school, hence the many schooling marks to facilitate recognition.

During spawning many fish go through complicated patterns of fin shaking and body movements. These movements the partner will recognise by changes in pressure on the neuromasts and will respond according to the specific message being conveyed. Again, these fin movements are probably intended to be recognised both by the lateral line and by visual means.

In cichlids guarding young, a quick shake of the



Photo Ian Sellick

During breeding the 'whiskers' of *Corydoras* catfish are used to signal willingness to spawn by touch

fins usually means that danger is approaching and causes the young to hide or 'run to mother'. The reception of this message is certainly by the lateral line. Many other stimuli that we know nothing about are probably also picked up by the lateral line receptors, as it is difficult for us to visualise these pressure waves as we have no similar sense organs, whereas we can appreciate the sounds that fish hear, and what they see.

Electrics and Fish

Many electric fishes are known, such as the electric eel (*Electrophorus electricus*) and the electric catfish (*Malapterus electricus*). These fishes produce extremely powerful discharges, up to 600 volts over a period of a few thousandths of a second with a current of about 0.5 amperes—enough to light a bulb briefly. These spectacular discharges are usually used to stun prey and have been developed from special serial muscle cells accounting for some 50% of the body weight in the electric eel.

However, there are other, less spectacular electric fishes which produce only a few volts from small organs in the tail. These are the well-known elephant-nose fishes (mormyrids) which send out electrical impulses almost continuously at an average rate of about 300 per second, at a tension from 3 to 7 volts. Apart from sending these signals, the fish are extremely receptive of them and seem to be able to use them primarily as a kind of electric 'sonar', where disturbance in the fish's electric field registers as an object to be avoided if the disturbance is large, or to be investigated if the disturbance is small. Apart from this navigational aid, it is postulated that the electric signals could be a means of communication between members of the same species, enabling them to

establish agreed territorial boundaries. However, this research is still much in its infancy because of the difficulty of making recordings, as any object placed in the water alters the fish's electric field, and thus distorts readings.

Functions of Communication

The various uses of the different types of communication found in fishes have been briefly mentioned in the appropriate sections of this series of articles; and can be summarised here as occurring in the following situations:

- (1) Sex determination
- (2) Species recognition
- (3) Individual recognition
- (4) Messages of warning, threat, defence, neutrality
- (5) Reproductive behaviour: spawning, territory defence, guarding and herding young

The above short list is by no means comprehensive or detailed; but it gives some idea of the range of functions of communication. For further information about all of the aspects of communication mentioned, and further examples, the following books and articles:

General information

Burkhardt, Schleidt, Altner. (1967) SIGNALS IN THE ANIMAL WORLD. George Allen & Unwin Ltd. (A very readable account of the uses of sense organs in all animals, but with several chapters devoted to fishes.)

Fryer, Hles. (1972) THE CICHLID FISHES OF THE GREAT LAKES OF AFRICA. Oliver & Boyd. (Contains a fascinating account of the language of African cichlids.)

Specialised information

Kleerekoper. (1969) OLFACTION IN FISHES. University of Indiana Press. (A highly detailed account of smell in fishes, but with some 50 pages devoted to olfaction and behaviour, of interest to the aquarist with biological training.)

Todd. (1971) The chemical language of fishes. In: SCIENTIFIC AMERICAN, 224, (5), 98-108. (A fascinating study of the American bullhead, purchasable as a reprint from W. H. Freeman & Co., 58 Kings Rd., Reading, RG1 3AA.)

Lissmann (1963) Electric location by fishes. In: SCIENTIFIC AMERICAN (March). (Comprehensive survey of low-voltage electric fishes with useful bibliography. Available as reprint as the paper above.)

Pfeiffer (1962) The fright reaction of fish. BIOLOGICAL REVIEWS, 37, 495-511. (The fright reaction among the Ostariophysi, and its specificity. Interesting article of general interest.)

Fish, Mowbray. SOUNDS OF WESTERN NORTH

ATLANTIC FISHES. (Contains over 200 spectrograms from fishes as diverse as eagle rays and seahorses.)

All the above contain further, often extremely comprehensive, bibliographies which will be of interest to the specialist. Most of the books are available to special order from county or university libraries.

Observations of Behaviour

Fish behaviour is an extremely complex and fascinating subject; however, there are one or two points which need to be borne in mind about its study in the aquarium.

- (1) Fish may not behave normally, or react as they normally would in the wild, in the confines of an aquarium.
- (2) In a small volume of water, any communicatory substances released will not become diluted and may have an exaggerated effect.
- (3) Sounds and electrical signals may be dis-

torted by the walls, or metal frame of an aquarium.

Despite these limitations on the observation of behaviour in the aquarium, most of the work, of necessity, has to be done under these conditions owing to the difficulty of observation in the field. Thus the aquarist is often in just as good a position as the professional fish behaviourist to study his fishes—many a new phenomenon in fishes has been found by an aquarist reporting some unusual finding in a magazine article. So please aquarists, if you notice anything unusual that your fish do—or if you spawn a rare fish—make observations and record them, and then report them somewhere. It doesn't matter if it turns out that someone else has already spawned arapaimas and found that they constantly talk to their young or whatever, nobody will criticise you for repetition—most scientific work consists of repetition anyway.

So let's have those articles or reports, you people I know to be spawning *Julidochromis*, *Lamprologus aurora elongatus* etc. Don't be selfish!



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London SW17 0NY

To the Sit-at-homes

THIS year's (1973) Hendon Congress was ranked by all who attended as one of the best ever—why then was there such a disappointing attendance? We cater for 400, but less than 200 came. What does the British aquarist want? Of all the clubs affiliated to the FBAS only a mere eleven could produce a tableau at The Aquarium Show 1973. Everyone knows that few societies can make their open show pay. What, then, do aquarists want?

As regards the Hendon Convention we really could not blame the petrol shortage. Even societies from London and the Home Counties made no effort to hear Mr W. Torney—a Dutch lecturer with an international reputation. Please write and let us know your views.

In the meantime, we shall continue planning for our 1974 Congress.

HENRY WHITE
Hendon & District Aquarists Society

Rescue at The Show

MAY we express, through the medium of PFM our grateful thanks to the unknown (to us)

young man who came to our rescue, with the length of swimming pool lining for our 'tank' at The Aquarium Show. This obviously saved the day for us. If he would like us to return it, I will gladly post it back to him.

We would also like to thank you and your staff for the help and kindness that we received at the Show—it really is a friendly social occasion to us. Looking forward to The Aquarium Show '74.

(MRS) J. STILLWELL
Portsmouth Aquarists Society

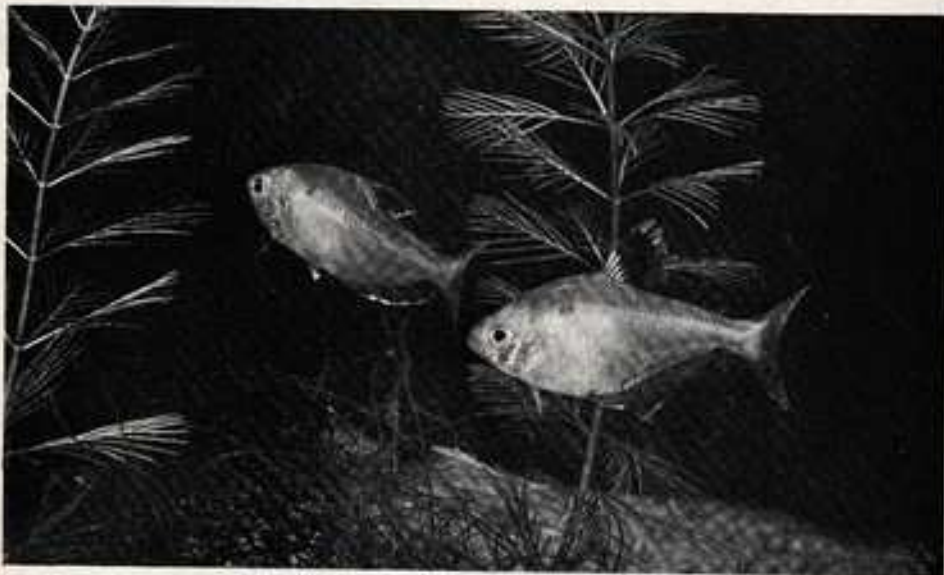
The Aquarium Show dates this year are 15th to 27th October.—EDITOR.

I WISH to thank you and the officers at The Aquarium Show for their kindness and consideration in dealing with fish sent to you by train from Newcastle to the Show, and on behalf of my wife and fellow aquarists say how much we enjoyed the Show and that we will most certainly come again.

G. T. LEDGILL
Tyne-Tees Area Association

 Keeping and Breeding

The Serpae Tetra



Hyphessobrycon serpae DURBIN

THE serpae tetra holds an honoured place in the large and very popular family Characidae. This is not surprising since its blood-red colouring makes it a very desirable acquisition to aquarists. From a distance, a shoal of these tetras mixed with other tetra varieties and housed in a well-lit, thickly planted tank, makes an unforgettable sight.

The fish's natural habitat is the Rio Guaporé and Amazon regions, and they were first introduced into Europe in 1924 when they were incorrectly designated *Hyphessobrycon minor*. Even today they are mistaken for *H. callistus*, but this is by no means a serious error to make since, as with other species in this group, there are a number of 'forms' or varieties that make it difficult even for the expert ichthyologist to differentiate between them. According to Sterba, the species of the genus *Hyphessobrycon* are differentiated from the closely related *Hemigrammus* species by the scale-less base to their caudal fin (in *Hemigrammus* the base of the caudal is scaly).

As I have already hinted, the serpae tetra is a shoaling fish so that one should keep 8-12 specimens in not too small a tank. They do best in a well-lit, medium to large tank, at a temperature of at least 68°F (20°C). The water should be clear, moderately soft to slightly hard and slightly acid (these water conditions apply for most of the other small characin species). Sex differences are not always easy to

By RUDOLPH ZUKAL

Photographs by the author

Translated by F. MARSH



During courtship fluttering movements of the male (left fish in the picture on the facing page) entice the female to follow him into the plants. In the spawning area the male swims at the side of the female, approaching closer and closer as they swim round (photographs above)

distinguish, for the male and female fish closely resemble each other and have the same colouring. But the adult male is slimmer and when his body is viewed against the light the male's swim bladder can be seen to come to a point in the rear.

For breeding purposes a male that is already displaying is selected from the shoal. The fish will be eager to spawn and a 3-4 gallon (10-15 litre) glass tank will be quite suitable for them. The water for this tank should be soft and the temperature must be raised to 75-78°F (24-26°C). The male is put into the breeding tank a day before the female and some fine-leaved plants for the fish to spawn on should be supplied. The male will begin the display, fluttering in front of the



As spawning (right) an extremely rapid contact of the bodies of the pair occurs followed by their immediate separation



As the pair press together at spawning the male's caudal fin is curled slightly and very briefly over the posterior part of his mate

female, swimming to the spawning place, encircling her, enticing her and eventually, immediately before the spawning act, will succeed in approaching her, usually from the side and with an upward movement. The pattern of movements that takes place while the eggs are released is not just haphazard. This applies to most *Hyphessobrycon* and *Hemigrammus* species—but there is a difference with serpaé tetras—they never 'embrace' with their bodies. They simply press their flanks together (the male does not always even put his caudal over the female's body) and with a jerk the eggs are ejected, the fish part and the eggs fall downwards. All this takes place in the fraction of a second—'like lightning', and it really cannot be witnessed with the human eye. The spawning is repeated some 20 times during a period of 2-4 hours and several hundred eggs are produced—it is not unusual to obtain 300 young fish from a good pair.

Immediately after the mating both parents must be removed; it doesn't in the least matter whether or not the spawning tank is darkened. On the sixth day after they become free-swimming they can be provided with the finest live foods. They do not grow particularly quickly and not until they are at least 6 months can the sex differences be distinguished, and then only with difficulty. For spawning, fish at least a year old should be used. One pair can be spawned several times during a year and it appears that an increase in atmospheric pressure will usually cause them to spawn readily.

The Pearlscale Goldfish Variety

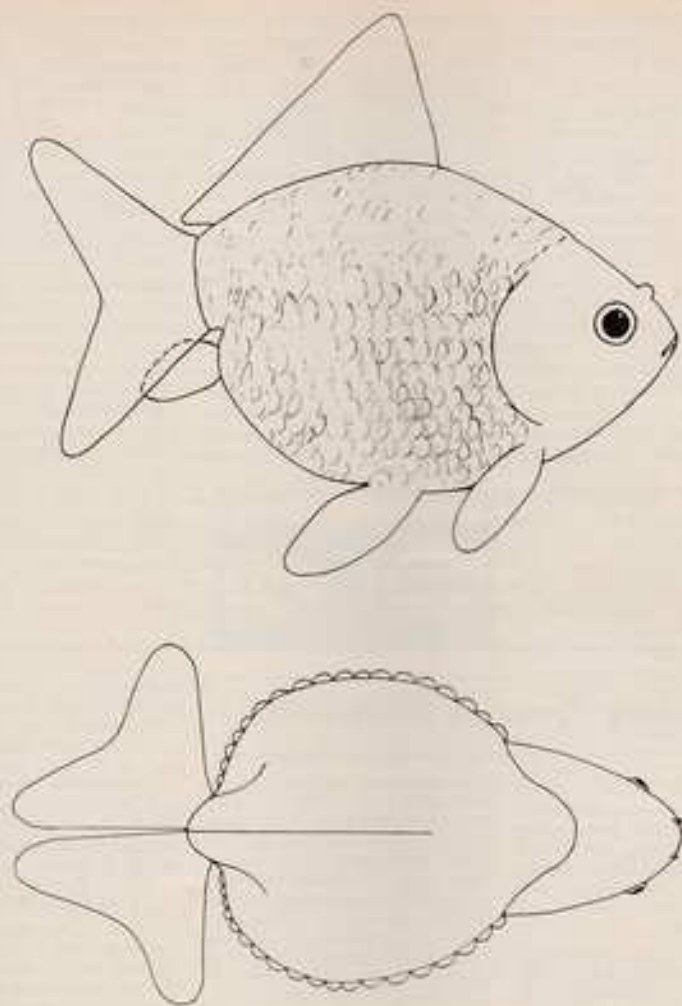
By M. D. CLUSE

President, The Goldfish Society
of Great Britain

THERE are at least three genetically determined shapes of scales on goldfish. They are the normal, the hammered and the pearled. The hammered has a partially concave surface and the region where the maximum reflection occurs appears as a bright spot. It is rarely seen and possibly is a recessive character, but in some importations of common goldfish a proportion with this 'hammered' factor may be observed. It probably would not be noticeable on calico fish as the necessary shine would be absent. There is no reason why it should not appear on any variety of goldfish, but I can only recall it on singletailed fish.

The pearled scale has a 'domed' portion, that is to say, it is convex and therefore the reflected

light will be spread. With a calico fish the shining guanine backing to the scale will be missing and the layers of tissue forming the 'dome' will be opaque, and this gives a 'pearled' appearance. The metallic 'pearlscale' will have the same shape and little obvious knobs appear in rows, but there is too much shine to make a 'pearled' appearance. This factor is recognised by the Goldfish Society of Great Britain only on a divided tailed, double-anal-finned, deep-bodied fish, with short to



Characteristic outlines of a specimen pearlscale seen from the side and from above (lower drawing). Illustrations from the Standards Book of the Goldfish Society of Great Britain and reproduced by permission.

medium length upward-perked caudal fins similar to the fantail.

However, another notable feature of the body is that it is exceptionally globular and the scales do not lie so flat as with a normal fish—indeed they seem to protrude somewhat. This appearance

seems to be caused by a separate genetic factor, which swells the body in a dropical manner. This gives the possibility of seeing slightly under the scale of the pigment unbacked by guanine on the underlying scale.

Unfortunately, the raising of the scales does

allow entry for some parasitic organisms into the dermis. Red spots sometimes appear and this condition I cure with acriflavine, but it would be better to keep the water cleaner. I suspect also that some aquarists have had trouble with the descaling mite, which would have easier access. Moreover the protruding scales are not so firmly fixed in the dermis as are normal scales and the slightest rough handling can knock them off. Because of the angle of the scales and the opaqueness of the pearls, blue is seldom apparent on adult calico pearlscales. Blue is caused by black pigment below the dermis.

Three other groups of scales can be identified in addition to the varying shapes. The normal scale has a mirror-like backing of guanine where it is not overlapped by surrounding scales. This gives it a gold or silver appearance. The second type is transparent with no guanine backing. This gives rise to the 'calico' appearance. If there is no guanine in the layer below the dermis then the transparency will be greater and there will be very little pigment. This type of fish is called 'matt'.

If, however, the second layer of guanine appears partly or wholly below the dermis this gives a mother-of-pearl effect and the group is called nacreous. Black pigment deep down below or in association with this second layer of guanine gives a blue effect, although black pigment above the

scales or in the fins appears as black. Orange or yellow pigment may also appear on the scales and in the finnage. This colourful effect, as in the British shubunkin, is very much sought after by aquarists, but it is an intermediate or hybrid group between the metallic and the matt. If the latter two groups are crossed, the offspring will be 100% nacreous. If both parents are nacreous then the offspring will be 50% nacreous, 25% metallic and 25% matt.

There is a third 'shine' group of scales which so far has been unidentified in this country. This is the 'netlike transparent', which has been described by the Japanese scientist, Dr Y. Matsui. With this scale the guanine is only partly present and therefore it does not entirely mask the pigment below as seen through the transparent parts of the scales. Hence the net-like appearance.

These three last-mentioned groups, which are caused by variation in the amount of guanine backing on the scales, are controlled by quite separate genetic factors to those affecting shape of scale, body finnage or special characteristics. Therefore in theory they could arise in conjunction with these other characteristics eventually. Only a few years ago the lionhead, celestial, bubble-eye and pompon were known only in the metallic group in this country, but now the nacreous type of each variety has appeared on our show benches.

Readers' Queries Answered

Rainbow Fish

I have three Madagascan Rainbow fish which don't seem to be settling down in my tank very well. I think they may be being attacked by another fish because they seem to be very timid and their fins are beginning to look ragged. Could this be the cause?

It is seldom possible to completely rule out the possibility that one fish is attacking others, even if the rather innocuous contents of the tank seem to preclude it. But before trying to isolate the culprit it would be worth checking to see if it is only the rainbow fish that are looking ragged. It is really more likely that the conditions in your tank are not entirely suitable for them as their requirements are fairly specific. They require hard, slightly alkaline water and are not comfortable in acid water. This species does often show fin rot. Frequent partial water changes should help and also slight aeration of the replacement water

(one teaspoon of salt per gallon) if this can be done without drastically affecting the conditions for the other tank inhabitants. They may well take a little while to settle into a new tank because they do not always take very kindly to being moved and prefer the shadier corners of the tank, seeking out the darker places away from the light, which might make them seem timid fish.

Spawning Danios

My leopard danios, when bought, were clearly a pair. The female was very rounded and seemed to be about to spawn. She lost this roundness and I took it that a spawning had taken place and the eggs eaten by the other fishes. However, she has never become very rounded again and I don't know when to put them out for breeding.

It is possible that the male is causing the female to drop her eggs

haphazardly, a few at a time, with no chance of their being fertilised. It is necessary to bring the female into breeding condition by separating her from the male and giving her a chance to develop breeding trim in a peaceful fashion. Do not forget to remove the parents as soon as the spawning is completed—they are avid egg-eaters.

Flag Cichlid Parents

I have just lost the eggs of a first spawning of flag cichlids. I am rather disappointed as I don't wish to rear the eggs separately and I thought these fish were very good parents. They have been very peaceful tank inhabitants, anyway. Will they do this continually now?

Flag cichlids are reputed to frequently eat the eggs of the first spawning, as do quite a few young cichlid parents. However, this does not usually continue and the next spawning should result in fry. The parent fish generally tend the eggs and fry carefully but not infallibly. In 1931 January 1970 Herr E. Zukal described a spawning of flag cichlids in which the usual male

female behaviour was almost reversed, with the female taking the dominant rôle. He also warns that 'the parents do not always watch over and tend the brood as they are reputed to do'.

Unusual Catfish 1

I have just obtained a catfish by the name of *Agostyx pectinifrons*. I know it is a South American catfish of the family Doradidae but I would be grateful if you could tell me some more about it. I am keeping it with large Oscars and it is taking os-heart quite well. I have been told that it is quite a nice fish.

Of the Doradidae, it is the *Acantodoras* genus that is more usually kept in aquaria, but talking catfish are, in any case, possibly more popular with the 'serious' collector—they are nocturnal and likely to be rather static during the day. However, they are hardy and can stand a wide temperature range; 50–75°F will be entirely suitable for them. Hiding places are required for them during the time that the tank is lit. Os-heart is a suitable food but they will grab about and also eat unseasoned dried food and worms dropped by the Oscars. Their bony armour plating and toothed pectoral and dorsal spines make them well able to take care of themselves in the presence of much larger fishes.

Unusual Catfish II

I recently purchased a catfish 6 in. in length, which the dealer listed under the family *Pimelodidae*, but according to the *Pictorial Encyclopedia of Fishes* it is the family *Clariidae*, having four pairs of barbels and being eel-like in appearance. I am wondering if I have the fish *Heteropneustes fossilis* as it fits the appearance of the illustration on p. 232, plate 381, of that book. Could you help me with information regarding food, temperature required and water conditions needed for it as I am really a fresh novice in fishkeeping?

If your fish resembles the photograph you quote it is not one of the *Pimelodidae*—the *Pimelodidae* have three pairs of barbels, a dorsal fin close to the head and an adipose fin of some form or other. *Heteropneustes fossilis*, on the other hand, has a little flag-like dorsal a third of the way along the body from the head. It is a member of the *Clariidae*

family but although very like the *Clarias* genus in appearance—eel-like body, flat head, large mouth *Clarias* have the long wavy dorsal fin stretching over two-thirds of the way along the back. *Heteropneustes fossilis* becomes very large and can exist out of water, so that the large tank they require must be weighted down or they are liable to be found on the floor. They tolerate a wide temperature range, but 70–75°F will be agreeable to them and water conditions are not at all critical.

Their main activity will take place at night as they are voracious and they would appreciate cressies provided by rockwork to graze over during the day. They are voracious fish and cannot, of course, be kept with fishes of unequal size; they will require heavy feeding with garden worms, boiled oatmeal, pieces of

raw meat and os-heart, soaked fish, live guppies, dog food etc. They are very long-lived, 10–15 years is not unusual.

Safe in the Community?

I have been given some *Epiplatys balacistrus*, having been assured by the owner that they are safe in the community tank, but I am still suspicious about them. Are they safe with small species?

Yes, they are. It is, of course, rather a hazardous thing to state that even the most innocuous fish is 'safe'—and hair-raising stories about the cannibalistic tendencies of a number of blood-fins recently reported to us merely confirms this—but *E. balacistrus* is known to live happily with neon, glowlights and fishes of this size.



THE BRITISH KOI-KEEPER'S SOCIETY was represented at the BAF by members of the Society's NORTHERN SECTION who devised, supplied and manned the very successful stand on which many koi, some 12 to 15 in. long, were displayed in an 18 ft. by 8 ft. pond, backed by screens and a hand-painted Japanese-style mural, lit by coloured spot-lights. The stand was very popular with the public, if not with the BAF organisers. The autumn meeting of the Society was held, as usual, during The Aquarium Show at the RHS Hall, London. Over 80 members enjoyed an informative slide lecture on pond construction, filtration, water-changing and koi, given by chairman Mr E. A. Allen. The Society also staged an attractive stand with koi displayed in a pond and aquaria, and members were available for information on koi-keeping. Membership of the British Koi-Keepers' Society is £1.50 per annum, £1.75 for married couples; further details, also of local sections etc., may be obtained from the general secretary, Mrs H. M. Allen.

1. Anthony Close, Peterborough, PE1 2NU; phone (0733) 67997.

MR T. ROBERTS of N. Staffs won the best fish in show award (K. & C. Geary trophy) at the HINCKLEY & DAS Open Show. Other trophy winners were: Barrie Solwell trophy (a.o.c. barb), Mr P. Barnett (Ind.); K. & J. Hill trophy (anabantid), Mrs M. Austin (Hinckley); Nuncatun & Warwickshire Bdg. Soc. shield (angel fish), Mr T. Salisbury (Bedworth); R. & M. Austin shield (cichlid), Mr H. Kuhn (Lincoln); Multi Broadcast trophy (society most points), Bedworth; Whitburn Autos challenge shield (society most points), Bedworth; Bernice Roberts trophy (individual most entries), Mr G. W. Clarke (Northants.); J. Roberts Rose Bowl (individual most points), Mr J. Salisbury (Bedworth); Eddie Saint shield (best coldwater), Mr K. Bates (Hinckley). Remainder of results:

1st Guppy: 1. Mr R. Clarke (Pelsall); 2. Mr S. Walker (Coventry); 3. Mr C. Pratt (Bosworth); 4. Mr J. Igoe (Sherwood); 5. Mr R. Shakespeare (Bedworth); 6. Mr G. W. Allen (Ind.); see Lindbourn; 7. Mr D. Pennington (GRN); 8. Mr C. Pratt; 9. Mr G. W. Allen, Small Characin; 1. Mr J. Salisbury (Bedworth); 2. Mr G. W. Allen; 3. Mr P. Hickey (Pelsall); see Characin; 4. Mr T. Roberts; 5. Mr & Mrs Ward (Barbury); 6. D. & H. (Tamworth); Small barb: 1. Mr & Mrs Ball (Derby); 2. D. & H.; 3. Mr T. Gould (MFA); see Barb; 4. Mrs. F. Barrett (Ind.); 5. D. & H.; 6. Mr Sissons (Coventry); Dwarf cichlid: 1. Mr H. Kuhn (Lincoln); 2. Mr A. Dale (Pelsall); 3. Mr & Mrs Ward; Angel fish: 1 & 2. Mr T. Salisbury; 3. Mrs M. Igoe (Sherwood); see Cichlid; 1. Mr R. Shakespeare; 2. Mr G. W. Allen; 3. Mr G. Cozer (GRN).

at open shows. Entries at table shows have been very high and at the final show over 700 fish were berthed. The breeding programme, launched early in the year, was hampered by so much 'moving house' but finally got under way and several members have qualified for their first Breeders' Diplomas. The staging of the annual exhibition at the Liverpool Show was memorable for many reasons. Shortage of 'venue' resulted in the Society being given a much smaller marquee than usual and all plans had to be hastily revised, as everyone was very gratified when the Society was awarded a Gold Medal by Liverpool Corporation, which helped make up for the disheartening experience of breaking down in a marquee literally silted deep in mud. Many interesting meetings have taken place during the year with lectures from Mr Graham Wood (Canada), who has been living in England for a time, Mr I. Wood, secretary of the ENAS, Mr Gordon Holmes and Dr Lewis.

A **GOLDFISH** was the best fish in show award at the **MID-HERTS AS Open Show**. It was entered by Mr Crew (Wellingborough), and was judged the best fish out of a record 468 entries. Sudbury AS was the points trophy. Full results are:

- A. United AK. Ad. 1. Mr A. Walsh, Ave. 1. Mr R. A. Walsh, 2. Mr A. Walsh (Mid-Herts). 3. Mr M. Lander (Mid-Herts). 4. Mr D. Cradock (Hemel Hempstead). 5. Mr L. G. Little (Bucknell). 6. Mr A. Lundy (Mid-Herts). 7. Mr R. A. Orr (Haverhill). 8. Mr D. G. Wood (Haverhill). 9. Mr P. A. Moore (Sudbury). 10. Mr L. G. Little (Bucknell). 11. Mr L. J. Bunter (Sudbury). 12. Mr R. E. Lee (Northampton). 13. Mr D. Lyle (High Wycombe). 14. Mr J. F. Farrow (Dunsmuir). 15. Mr R. J. Bunter (Mid-Herts). 16. Mr D. G. Wood (Haverhill). 17. Mr L. G. Little (Bucknell). 18. Mr L. G. Little (Bucknell). 19. Mr L. G. Little (Bucknell). 20. Mr R. L. Gilford (Dunstable). 21. Mr A. Worth (Mid-Herts). 22. Mr R. L. Gilford (Dunstable). 23. Mrs S. Wood (Hemel Hempstead). 24. Mr M. J. Lewis (Sudbury). 25. Mr R. Green (Mid-Herts). 26. Mr P. A. Moore (Sudbury). 27. Mr L. J. Bunter. 28. Mr M. J. Lewis. 29. Mr L. G. Little. 30. Mr A. C. Taffe (Hemel Hempstead). 31. Mr T. A. Cradock. 32. Mr A. Schofield (Hemel Hempstead). 33. Mr C. Kibbrough (Caversham). 34. Mr P. Scuderi (Mid-Herts). 35. Mr A. Lundy. 36. Mr A. C. Taffe. 37. Mr C. De Crea (Dunsmuir). 38. Mr S. J. Bunter. 39. Mr A. Lundy. 40. Mr W. Bunter. 41. Mr A. Lundy. 42. Mr L. J. Bunter. 43. Mr Crew (Wellingborough). 44. Mr D. G. Wood. 45. Mr L. G. Little. 46. Mr C. Kibbrough (Caversham). 47. Mr A. Worth. 48. Mr P. A. Moore. 49. Mr C. Kibbrough. 50. Mrs M. Crew (Wellingborough). 51. Mr L. G. Little. 52. Mr A. Lundy. 53. Mr A. Borer (Hemel Hempstead). 54. Mr Crew. 55. Mr A. Walsh. 56. Mrs

D. Cradock. 57. Mr A. C. Taffe. 58. Mr A. Lundy. 59. Mr L. G. Little. 60. Mr U. A. Moore. 61. Mr J. Bunter. 62. Mr P. S. Radford (GSHB). 63. Mr P. S. Radford. 64. Mr A. Lundy. 65. Mr P. A. Moore. 66. Mr P. A. Moore. 67. Mr P. A. Moore. 68. Mr P. A. Moore. 69. Mr P. A. Moore. 70. Mr P. A. Moore. 71. Mr P. A. Moore. 72. Mr P. A. Moore. 73. Mr P. A. Moore. 74. Mr P. A. Moore. 75. Mr P. A. Moore. 76. Mr P. A. Moore. 77. Mr P. A. Moore. 78. Mr P. A. Moore. 79. Mr P. A. Moore. 80. Mr P. A. Moore. 81. Mr P. A. Moore. 82. Mr P. A. Moore. 83. Mr P. A. Moore. 84. Mr P. A. Moore. 85. Mr P. A. Moore. 86. Mr P. A. Moore. 87. Mr P. A. Moore. 88. Mr P. A. Moore. 89. Mr P. A. Moore. 90. Mr P. A. Moore. 91. Mr P. A. Moore. 92. Mr P. A. Moore. 93. Mr P. A. Moore. 94. Mr P. A. Moore. 95. Mr P. A. Moore. 96. Mr P. A. Moore. 97. Mr P. A. Moore. 98. Mr P. A. Moore. 99. Mr P. A. Moore. 100. Mr P. A. Moore.

- B. 1. & 2. Mr W. Lambick (Lancaster Marine). 3. Mr & Mrs C. Harding (Cardiff). 4. & 5. Mr & Mrs C. Harding. 6. Mr W. Gorrell (Cardiff). 7. Mr M. Strang (Dunsmuir). 8. & 9. Mr D. Scuderi (Cardiff). 10. Mr W. Gilford (Northampton). 11. Mr S. Cameron (Cardiff). 12. Mr J. Edwards (Lancaster Marine). 13. Mr J. J. Edwards. 14. Mr S. Don (Hemel Hempstead). 15. Mr M. Strang. 16. Mr D. Scuderi (Cardiff). 17. Mr C. Turner (Cardiff). 18. Mr D. Jones (Preston). 19. Mr D. Warriman. 20. Mr & Mrs Johnson (Preston). 21. & 22. Mr C. Turner. 23. & 24. Mr M. Adkins (Northampton). 25. Mr & Mrs Williams (Hemel Hempstead). 26. Mr J. Hill (Preston). 27. Mr W. Lambick. 28. Mr M. Lambick. 29. Mr & Mrs Williams. 30. Mr M. Lambick (Preston). 31. & 32. Mr & Mrs Williams (Hemel Hempstead). 33. Mr S. Don (Hemel Hempstead). 34. Mr J. J. Edwards. 35. Mr A. Chick (Hemel Hempstead). 36. Mr P. Burch (Cardiff). 37. & 38. Mr D. Warriman. 39. Mr J. M. Strang. 40. Mr J. D. Jones (Cardiff). 41. Mr J. J. Edwards. 42. Mr D. Warriman. 43. Mr & Mrs C. Harding. 44. Mr C. Morrison (Preston). 45. Mr C. Turner. 46. Mr C. Turner. 47. Mr C. Turner. 48. Mr C. Turner. 49. Mr C. Turner. 50. Mr C. Turner. 51. Mr C. Turner. 52. Mr C. Turner. 53. Mr C. Turner. 54. Mr C. Turner. 55. Mr C. Turner. 56. Mr C. Turner. 57. Mr C. Turner. 58. Mr C. Turner. 59. Mr C. Turner. 60. Mr C. Turner. 61. Mr C. Turner. 62. Mr C. Turner. 63. Mr C. Turner. 64. Mr C. Turner. 65. Mr C. Turner. 66. Mr C. Turner. 67. Mr C. Turner. 68. Mr C. Turner. 69. Mr C. Turner. 70. Mr C. Turner. 71. Mr C. Turner. 72. Mr C. Turner. 73. Mr C. Turner. 74. Mr C. Turner. 75. Mr C. Turner. 76. Mr C. Turner. 77. Mr C. Turner. 78. Mr C. Turner. 79. Mr C. Turner. 80. Mr C. Turner. 81. Mr C. Turner. 82. Mr C. Turner. 83. Mr C. Turner. 84. Mr C. Turner. 85. Mr C. Turner. 86. Mr C. Turner. 87. Mr C. Turner. 88. Mr C. Turner. 89. Mr C. Turner. 90. Mr C. Turner. 91. Mr C. Turner. 92. Mr C. Turner. 93. Mr C. Turner. 94. Mr C. Turner. 95. Mr C. Turner. 96. Mr C. Turner. 97. Mr C. Turner. 98. Mr C. Turner. 99. Mr C. Turner. 100. Mr C. Turner.

OVER 400 entries were received for the **IRISH TROPICAL FISH SOCIETY'S** Annual Open Show held at the Mansion House, Dublin. Mr W. Peacock of Belfast received the award for best fish in show. Results were:

**NEXT TIME ASK
FOR
Brosiam
FISH FOOD**

Furnished aquaria: 1. & 2. Mr S. Mooney (Preston). 3. Mr T. Savage (Dublin). 4. Mr B. Walsh (Dublin). 5. Mrs J. Brennan (Dublin). 6. Mr S. Mooney. 7. Mr R. A. Davis (Dublin). 8. Mr W. J. Peacock. 9. Mr H. Kish (Dublin). 10. Mr D. M. Prater (Belfast). 11. Mr J. Burch (Fallowfield). 12. Mr D. H. Wright (Bry). 13. Mr E. McGandy (Dunsmuir). 14. Mrs T. Brennan. 15. Mr R. McNaughton (Blackrock). 16. Mr W. Peacock. 17. Mr J. Scuderi. 18. Mr D. Bunter (Dublin). 19. Mr D. M. Prater. 20. Mr L. Patton (Dun Loughrey). 21. Mr & Mrs W. Peacock. 22. Mr P. Scuderi. 23. Mr P. Scuderi. 24. Mr H. Damm (Belfast). 25. Mr D. M. Prater (Gosport). 26. & 27. Mr K. Norman. 28. Mr G. Goad (Bangor). 29. Mr D. Bunter. 30. Mrs A. Keenan (Preston). 31. Mr D. Bunter. 32. Mr M. Conroy (Dublin). 33. Mr D. Hughes (Dublin). 34. Mr S. Mooney. 35. Mr W. Peacock. 36. Mr S. Mooney. 37. Mr F. Ryan. 38. Mr L. Patton. 39. Mr P. G. O'Sullivan (Dublin). 40. Mr J. Damm (Dublin). 41. Mr D. Pease (Dublin). 42. Mr D. Pease. 43. Mr J. Damm. 44. Mr C. McGuffee (Dublin). 45. Mr K. Norman. 46. Mr D. Bunter. 47. Mr L. Patton. 48. Mrs M. Brennan. 49. Mr J. O'Brien (Dublin). 50. Mr S. Mooney. 51. Mr W. Peacock. 52. Mr S. Mooney. 53. Mr L. Patton. 54. Mr S. Mooney. 55. Mr L. Patton. 56. Mr S. Mooney. 57. Mr L. Patton. 58. Mr S. Mooney. 59. Mr L. Patton. 60. Mr S. Mooney. 61. Mr L. Patton. 62. Mr S. Mooney. 63. Mr L. Patton. 64. Mr S. Mooney. 65. Mr L. Patton. 66. Mr S. Mooney. 67. Mr L. Patton. 68. Mr S. Mooney. 69. Mr L. Patton. 70. Mr S. Mooney. 71. Mr L. Patton. 72. Mr S. Mooney. 73. Mr L. Patton. 74. Mr S. Mooney. 75. Mr L. Patton. 76. Mr S. Mooney. 77. Mr L. Patton. 78. Mr S. Mooney. 79. Mr L. Patton. 80. Mr S. Mooney. 81. Mr L. Patton. 82. Mr S. Mooney. 83. Mr L. Patton. 84. Mr S. Mooney. 85. Mr L. Patton. 86. Mr S. Mooney. 87. Mr L. Patton. 88. Mr S. Mooney. 89. Mr L. Patton. 90. Mr S. Mooney. 91. Mr L. Patton. 92. Mr S. Mooney. 93. Mr L. Patton. 94. Mr S. Mooney. 95. Mr L. Patton. 96. Mr S. Mooney. 97. Mr L. Patton. 98. Mr S. Mooney. 99. Mr L. Patton. 100. Mr S. Mooney.

One hundred and fifty-one competitors from 12 societies gave **BARNESLEY TFS** a personal record of 707 entries at their 9th Open Show. The best fish in show trophy was won by a guppy shown by Mr & Mrs Marshall of the BKA.

- Guppies: 1. Mr & Mrs Marshall (BKA section winner). 2. Mr L. Smith (Cardiff). 3. Mr & D. Leacock (Sheffield). 4. Mr J. S. Hall (Ayr). 5. Mr & Mrs Cohen (Preston). 6. Mr P. Bunter (Ayr). 7. Mr G. Hinton (Kangaroo). 8. Mr J. S. Hall. 9. Mr K. & Son (Hemel Hempstead). 10. Mr S. Mooney. 11. Mr S. Mooney. 12. Mr J. S. Hall. 13. Mr J. S. Hall. 14. Mr & Mrs Dwyer (Wood Valley). 15. Mr H. Worsley (Blackburn). 16. Mr D. Kennedy (Kangaroo). 17. Mr & Mrs Galt (Chorley). 18. Mr & Mrs Nelson (Hemel Hempstead section winner). 19. Mr & Mrs Cohen. 20. Mr L. Smith. 21. Mr & Mrs Blain (Cresswell). 22. Mr G. Thickbroom (Cardiff). 23. Mr & Mrs Torres (Anglo). 24. Mr & Mrs Torres. 25. Mrs J. Kirk. 26. Mr Ann (Ayrton). 27. Mr & Mrs Blain (Cresswell section winner). 28. Mr & Mrs Blain (Cresswell). 29. Mr Rood (Workington). 30. Mr & Mrs Dickinson (Preston section winner). 31. Mr & Mrs Riddell (Ayr). 32. Miss J. Gillies (Barnsley). 33. Mr A. Jones (Doncaster). 34. Mr Scott (Sheffield). 35. Mr J. Damm (Hemel Hempstead). 36. Mr & Mrs Clarke. 37. Mr Gilpin (Cardiff). 38. Mr & Mrs Clarke. 39. Mr & Mrs Clarke. 40. Mr & Mrs Clarke. 41. Mr & Mrs Clarke. 42. Mr & Mrs Clarke. 43. Mr & Mrs Clarke. 44. Mr & Mrs Clarke. 45. Mr & Mrs Clarke. 46. Mr & Mrs Clarke. 47. Mr & Mrs Clarke. 48. Mr & Mrs Clarke. 49. Mr & Mrs Clarke. 50. Mr & Mrs Clarke. 51. Mr & Mrs Clarke. 52. Mr & Mrs Clarke. 53. Mr & Mrs Clarke. 54. Mr & Mrs Clarke. 55. Mr & Mrs Clarke. 56. Mr & Mrs Clarke. 57. Mr & Mrs Clarke. 58. Mr & Mrs Clarke. 59. Mr & Mrs Clarke. 60. Mr & Mrs Clarke. 61. Mr & Mrs Clarke. 62. Mr & Mrs Clarke. 63. Mr & Mrs Clarke. 64. Mr & Mrs Clarke. 65. Mr & Mrs Clarke. 66. Mr & Mrs Clarke. 67. Mr & Mrs Clarke. 68. Mr & Mrs Clarke. 69. Mr & Mrs Clarke. 70. Mr & Mrs Clarke. 71. Mr & Mrs Clarke. 72. Mr & Mrs Clarke. 73. Mr & Mrs Clarke. 74. Mr & Mrs Clarke. 75. Mr & Mrs Clarke. 76. Mr & Mrs Clarke. 77. Mr & Mrs Clarke. 78. Mr & Mrs Clarke. 79. Mr & Mrs Clarke. 80. Mr & Mrs Clarke. 81. Mr & Mrs Clarke. 82. Mr & Mrs Clarke. 83. Mr & Mrs Clarke. 84. Mr & Mrs Clarke. 85. Mr & Mrs Clarke. 86. Mr & Mrs Clarke. 87. Mr & Mrs Clarke. 88. Mr & Mrs Clarke. 89. Mr & Mrs Clarke. 90. Mr & Mrs Clarke. 91. Mr & Mrs Clarke. 92. Mr & Mrs Clarke. 93. Mr & Mrs Clarke. 94. Mr & Mrs Clarke. 95. Mr & Mrs Clarke. 96. Mr & Mrs Clarke. 97. Mr & Mrs Clarke. 98. Mr & Mrs Clarke. 99. Mr & Mrs Clarke. 100. Mr & Mrs Clarke.

(Workshop, section winners): 1. Mr & Mrs Wells, Broulton (Inshore); 2. Mr & Mrs Toyn (section winner); 3. Miss S. Clark; 4. Mr W. Blundell, Pains (upstairs); 5. Mr & Mrs Wells (section winners); 6. Mr Hurl; 7. Mr & Mrs Parkes, Pains (Inshore); 8. Mr & Mrs Turner, 2. Mr & Mrs Wells; 9. Mr & Mrs Birdall, see Tropical; 10. Mr J. S. Hall (section winner); 11. Mr & Mrs Butt (Swanborough); 12. Mr & Mrs Simpson, Common goldfish; 13. & 14. Mr J. S. Hall, Fairy goldfish; 15. & 16. Mr J. S. Hall, see Goldwater; 17. & 18. Mr J. S. Hall (section winner); 19. Mr M. Clark, January 20; 20. K. & N. Parkes (Shelby); 21. Miss D. J. Perkins (Workshop); 22. Master R. Pines (Barnet); 23. Mrs. J. Hill (Avery-leasingham, section winner); 24. Mrs C. Whelan (Blackburn); 25. Mrs Cooper (Doncaster); 26. Master 20; 27. Master S. Rhodes (Four Star, section winner); 28. Mr J. S. Hall; Mr & Mrs D. Calder (Swanborough).

WHEN HASTINGS & ST LEONARDS AS held their inter-club show, the winners, **TONBRIDGE AS**, were winners with 1320 points to 1020. Results were:

Egglayers (Inshore): 1. Mr P. Stapley (Hastings); 2. Mr T. Adams (Hastings); 3. Mr J. Gray (Hastings), Conchifer; 4. Mrs R. Pritchard (Tonbridge); 5. Mrs Matheson (Tonbridge); 6. Mrs A. Adams (Hastings), see Livebearers; 7. & 8. Mr B. Pritchard; 9. Miss D. French (Hastings), see Tropical; 10. Mr D. Pritchard (Tonbridge); 11. Mr K. Stowell (Tonbridge); 12. Mr L. Matheson (Tonbridge), Livebearers; 13. Mrs I. Hillingham (Tonbridge); 14. Mr T. Adams; 15. Mr D. Pritchard.

FBAS judges were Mr D. Soper and Mr Corbin from Mid-Sussex AS. At the meeting members and visitors enjoyed a slide lecture on livebearers by Mr B. Funnell. At the next meeting Mr D. Soper of Mid-Sussex AS lectured on fish diseases. Covering the table with small bottles and packets, all of which promised a cure for everything, Mr Soper stated his belief that most of them were unnecessary and told members there which he had found best for most ills. Mr P. Stapley was voted in as show manager for the 1974 open show.

A VERY well attended meeting of **WEYMOUTH AS** greatly enjoyed a demonstration by secretary Mr A. Worth on how to set up an aquascap. Mr Wood used local fossilised wood and a variety of rock in his demonstration; afterwards, Master P. Taylor showed the 35 members present that junior members too can aquascap a tank. Mrs J. Mandel won in the Novelty Aquaria competition (11 entries); 2. Mrs H. Cleall; 3. Mrs J. Brooks. Judge of the table show for livebearers, Mr M. Medway, had 40 fish to consider and a hard task to finish by the end of the evening. Mr D. Muller won in the swordtails and platys classes, Mr M. Cleall in the guppies

FEDERATION Retirement of General Secretary Mr Ken Pye NEWS at AGM



THE Annual General Meeting of the FBAS was held at the beginning of December and a large attendance witnessed the retirement of long-serving general secretary Mr Ken Pye. He was first elected to the Council in 1956, and became Assistant Secretary in 1958 and secretary in 1963, thus making a total of 17 years' service on the Council. As a token of appreciation of the members, the Federation's chairman, Mr Frank Tomkins, presented him with a cut-glass decanter and glass set. Other retiring officers were Mr Maurice Carter, who had been a very successful publications secretary, and Mr Stan Applin. The Council for 1974 is: chairman, Mr F. C. Tomkins; vice-chairman, Mr L. Jordan; general secretary, Mr H. Parrish (18 The Barons, St Margarets, Twickenham, Middlesex, TS1 2AF); assistant secretary, Mr P. Lambourne; treasurer, Mr R. Dove; chairman, Judges and Standards Committee, Mr R. Eason; secretary, Judges and Standards, Mr C. A. T. Brown; Council members, Mrs S. Hodges and Mr A. Blake, Mr P. Cottle, Mr T. Glass, Mr D. Lambourne, Mr R. Mills and Mr A. Tullis.

On the recommendation of the Judges and Standards Committee, it was agreed that all B class judges of the FBAS be made available for open shows, owing to the fact that there had been so many open shows during 1973 and the future problems that were likely to arise from the fuel crisis.

To combat the ever-increasing pressures of inflation, which were being laid into administration costs, it was agreed that the new minimum affiliation fee should be £2.00, the first increase for many, many years. It has been estimated that the cost of published material for societies, and other communications, runs out at £1.00 per Society per annum.

Despite the trials and tribulations of the present times, the Federation has had the privilege of receiving over 100 enrolments to its membership during 1973. It was felt that this was a very satisfactory performance, and the hope was expressed that the 200 barrier will be surpassed during 1974.

A completion of Sixe Sheets for all classes will be made by early spring. A further publication of National Show Standards and an increase in titles of tape and slide lectures auger well for the expansion of the services of the Federation. Societies thinking of taking advantage of the facilities of the FBAS should write to the general secretary, Mr H. Parrish, at 18 The Barons, 5c Margarets, Twickenham, Middlesex.

The Federation wishes all its Members a happy and successful New Year.

PROVISIONAL plan for the AGM of the BRITISH CICHLID ASSOCIATION are that it will possibly be held in the Midlands in late March or early April. The association also intends to support a number of Open Shows and Exhibitions during the coming year with particular emphasis on providing information to hobbyists and members of the public. The new general secretary of the Association

is Mr Tony B. Acott, 18 Rosty Close, Hove, West, Middlesex TW3 4NF to whom all general correspondence, enquiries and suggestions should be sent. Membership secretary is Mr P. Berry, 151 Sherbrook Road, Daybrook, Notts. Subscriptions are: single members, £1.50, joint members, £2.00, associate members (clubs etc.), £3.00 and trading members £5.00.

and six livebearers classes and Mr J. Brooks in that for molluscs.

BEST fish in show at the NEWCASTLE GUPPY & LIVE-BEARER SOCIETY'S recent meeting was one entered by Mr B. Edwards. Best guppy and best livebearer were entered by Mr P. Wright; Independent swordtail trophy (FBAS) and Renson trophy (non livebearer) were won by Mr & Mrs Coates; Wallend Aquatics trophy (breeding pairs, guppy), Mr Ryan; Robinson trophy (male molluscs), Mr Fortuna; three matched male guppies trophy, Mr D. Pomeroy; breeding pairs livebearer trophy, Mr R. Lawson and breeders class guppy trophy, Mr J. Laidler. Remainder of results:

Male guppy: 1, Mr P. Wright; 2, Mr B. Lawson; 3, Mr J. Laidler. Female guppy: 1, Mr D. Pomeroy; 2, Mr Dancanson; 3, Mr Malsarum. Three matched male guppies: 1, Mr D. Pomeroy; 2, Mr J. Gallon; 3, Mr & Mrs Coates. Breeding pairs guppy: 1, Mr Ryan; 2, Mr J. Laidler; 3, Mr Pomeroy. Breeding class guppy: 1, Mr C. Laidler; 2, Mr G. Fossick; 3, Mr Fortuna; 4, Mr R. Lawson; 5, Mr G. Brown. Female molluscs: 1, Mr Dancanson; 2, Mr Patterson; 3, Mr & Mrs Coates. Molluscs trophy: 1, Mr & Mrs Coates; 2 & 3, Mr & Mrs Bennett; Female swordtails: 1, Mr & Mrs Coates; 2, R. & T. Wilson; 3, Mr Dancanson. Male platy: 1, Mr Steele; 2, Mr Robertson; 3, Mr R. Shanks. Female platy: 1, Mr & Mrs Bell; 2, Mr Dancanson; 3, Mr Greenwood. Breeding pairs livebearer: 1, Mr R. Lawson; 2, Mr Hughes; 3, R. & T. Wilson. Breeders class livebearer: 1, Mr & Mrs Coates; 2, Mr Newberry; 3, Mr Gray, non livebearer: 1, Mr & Mrs Coates; 2, Mr & Mrs Bennett; 3, Mr J. Laidler. Large fish: 1, Mr Southall; 2, Mr Dancanson; 3, Mr J. H. Dunstan. Small fish: 1, Mr & Mrs Balderson; 2, Mr Hope; 3, Mr Robertson. Se. Large cichlids: 1 & 2, Mr Newberry; 3, Mr Steele. Small cichlids: 1 & 2, Mr G. Brown; 3, Mr Newberry. Large characins: 1, Mr Cole; 2, Mr Dancanson; 3, Mr Bass. Small characins: 1, Mr J. Laidler; 2, Mr Holmes; 3, Mr & Mrs Newberry. 99. Eagle: 1, Mr P. Myers; 2, Mr Robertson; 3, Mr T. Hape & Son, non Latin: 1, Mr Gray; 2, Mr & Mrs Barra; 3, Mr R. Paddon. Barbours & Zebias: 1, Mr D. Pomeroy; 2, Mr Newberry; 3, Mr Harris. Egg-laying toothcarp: 1, Mr Malsarum; 2, Mr R. Nace; 3, Mr Malsarum. Shanks & Frye: 1, Mr & Mrs Barrett; 2, Mr Edwards; 3, Mr Brown. Catfish & South: 1, Mr Holmes; 2, Mr Brown; 3, Mr & Mrs Balderson. Breeding pairs egg-laying: 1, Mr B. Lawson; 2, Mr Newberry; 3, Mr R. Shanks. Breeders class egg-laying: 1, Mr & Mrs Coates; 2, Mr & Mrs Malsarum; 3, Mr G. Martin. Furciball: 1, Mr Robertson; 2, Mr E. Southall; 3, Mr & Mrs Barrett, non Coldwater: 1 & 2, Mr R. Edwards; 3, Mr Dancanson. non Tropical: 1, Mr Newberry; 2, Mr & Mrs Coates; 3, Mr Southall.

THE EAST LONDON AQUARIST & PONDKEEPERS ASSOCIATION'S annual open show was a highly successful event with a total of 246 entries. One of the high-

lights of the show was the furnished aquaria which alone gained 20 entries; most important was the fact that all fish entries were of high standard. Winners of both club and open trophies are: the I.G.M. trophy, Leytonstone AS; Marina Tropicals award, Mrs J. Arrow; the Arrow trophy, Mr J. Bos; the Gem trophy, Mr K. Wrightson; T. Jessopp Memorial trophy, Mr K. Purbrick (Hendon); Tetraprint trophy, Mr K. Purbrick; the Aquilla trophy, Mr W. Corby; the Polyplas trophy, Mrs J. Arrow; the J. & P. Tooling trophy, Mr F. Vicker; the Anabaz trophy, Mr M. Pearson; the G. Green trophy, Mr W. Corby; Gold Pin, Mr W. Corby; Five-Star Cup, Mr W. Corby; Breeder's Achievement Cup, Mr M. Pearson; Crocus Cup, Mr J. Bos; FBAS shield, Mr W. Corby; mini-furnished Cup, Mr K. Wrightson; individual furnished trophy, Mrs J. Arrow; Olympic Cup, Mr J. Linsale; Mason trophy, Mr K. Wrightson; Home-furnished trophy, Mr K. Baker; Tropical Cup (for table shows), Mr N.

Pearson; Three-Star junior trophy and Gill junior trophy, Mr S. Page. Remainder of results:

Club furnished aquaria: 1, Leytonstone AS (198); 2 & 3, Dancanson & DSS (174 & 140). Individual furnished aquaria: 1, Mrs J. Arrow (192); 2, Mr W. Corby (176); 3, Mr S. Jacobs (174). Mini-furnished aquaria: 1, Mr K. Wrightson (176); 2, Mr W. Pegg (161); 3, Mr J. Arrow (174). Aquatic record medals: 1, Mr S. Field (185); 2, Mr K. Wrightson (176); 3, Mr F. Vicker (176). Aquatic trophies: 1, Mr J. Bos (161); 2, Mr W. Corby (174); 3, Mr H. Jones (161). Barb: 1, Mr K. Wrightson (161); 2, Mr J. Bos (161); 3, Mrs P. Harris (161). Characins: 1, Mr K. Purbrick (176); 2, Mr K. Wrightson (176); 3, Mr M. Pearson (172). Cichlids: 1, Mr & Mrs Balderson (161); 2, Mr C. Dixon (161); 3, Mr D. Bedford (174). Dwarf cichlids: 1, Mr W. Corby (161); 2 & 3, Mr F. Vicker (161). Labrids: 1, Mrs J. Arrow (176); 2, Mr M. Pearson (174); 3, Mr D. Lane (172). Egg-laying toothcarp: 1, Mr W. Corby (161); 2, Mr J. Bos (161); 3, Mrs P. Harris (174). Stenopodoptera: 1 & 2, Mr F. Vicker (172 & 171); 3, Mr W. Corby (176). non Egg-laying: 1 & 2, Mr M. Pearson (16 & 176); 3, Mr F. Vicker (174). Danon, characins, stenopods: 1, Mr B. Argent (161); 2, Mr M. Pearson (176); 3, Mrs P. Harris (174). non Livebearers: 1, Mr & Mrs Balderson (176); 2, Mr A. Chandler (171); 3, Mr K. Apperard (161). 99. Molluscs: 1, Mr E. Jacobs (171); 2, Mr H. Jones (174); 3, Mr W. Baker (172). Single-tailed goldfish: 1 & 2, Mr J. Fleming (174, 67 & 66). Two-tailed goldfish: 1 & 2, Mr T. Hagen (165, 76 & 66). Danonidans goldfish: 1 & 2, Mr J. Linsale (61 & 61); 3, Mr F. Keadwell (161).

In Brief . . .

... AT the last inter-club meeting of 1973 **LLANTWIT MAJOR AS** beat Swansea by 11 points to 9. Throughout the year the Society competed in seven inter-club competitions, winning five and being two. All members are determined to average the one outstanding deficit by Barry AS on the return match in 1974.

... A NEW Society has been formed in the Bristol area—this is **NAILSEA**.

& **DAS**. For details of meetings please contact the secretary, Mr M. J. Ellick (3 Barrington Close, Nailsea; phone Nailsea 43 05).

... **HEMEL, HEMPSTEAD AS** has won the 12-a-side Challenge Competition against Welwyn Garden City AS by 897 points to 885.

... **THE BIRMINGHAM SECTION** of the EGA extend congratulations to Mr J. Matthews for winning his first silver card and to Mr R. Jones for gaining his fifth, which qualifies him for his silver pin guppy. The Section had an early and depressing discussion in November on the effect of the petrol crisis on meetings of an Association such as theirs whose members are so widely spread throughout the country.

... AT the **BRITISH AQUARISTS STUDY SOCIETY AGM** a talk on the fishes of the Crater Lakes of the West Cameroons was given by Dr E. Trewavas. This eminent speaker—a world-acknowledged authority on African fishes—illustrated her excellent talk by slides of her own field research conducted in the region 3 years ago. The lecture was followed by a panel of experts (Dr Trewavas, Dr Greenwood, Dr G. Vevers and Mr H. J.



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Aylott) answering questions on a variety of subjects put by members of the audience of over 80 people. The day was completed for members by the annual dinner in the Tavern Room. The next meeting of the society will be held at the London Zoo on 16th March and will take the form of a Symposium on Labyrinth Fishes. The main speaker will be Professor McNeill Alexander.

... THE slide lecture on catfish given by Mr D. Noble to **BRISTOL AS** stimulated a great deal of interest among members and provoked a good discussion during question time.

... **WINNER** of the Cup as Aquarist of the Year at **BRACKNELL AS** was Mr J. Horsey, who also received the Cup for Novice with the highest number of points. Mr L. Little received the Cup for the highest number of points in the specialist class and also that for the senior class.

... **BRIGHTON & SOUTHERN AS** are holding their AGM on 28th January. The Fish of the Year table show was judged by Mr C. Cochin who then went on to give an impromptu talk on the dos and don'ts of fish showing. The Society hope to have their own fish-showing stand soon which should ease the judges' task at future table shows.

... **WINNERS** of the garden pond competition at **HASTINGS & ST LEONARDS AS** are 1, Mrs Q. Pellard; 2, Mr C. Reed; 3, Mr A. L. McCormick. The Home Aquaria Competition was won by Mrs E. Reed (2), Mr C. Pennell; 1, Mr H. Carey). Best plants, Mrs E. Reed; best jurist, Andrew Reed. Members were disappointed at not seeing slides of the winning entries because of the Kodak strike. A talk by Mr R. Sankey on tropical marine keeping has also been greatly enjoyed.

... **THE BRITISH CICHLID ASSOCIATION (NORTHERN AREA)** are holding their third meeting in the Half Moon Inn, Garshead at 8.0 p.m. on the 17th January, 1974. All members and any one wishing to join the BCA are welcome. Further details from Mr C. A. Enright, 27 Longacre, Houghton-le-Spring, Co. Durham, DH4 5PY.

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... **WHEN BARRY AS** won the CNNA inter-club zone knockout contest against Llanrwst Major AS they were victors by 12 points to 8. The best fish award was made to an albino tiger barb entered by Mr Glover (L.M.). The Barry member achieving most points was Mr K. Thomas.

... A **NEW** society, **PETERSFIELD & DAS**, has been formed. Meetings are held at 7.45 p.m. on alternate Tuesdays, the Garden Room, High Street, Petersfield. Details from the secretary, Mrs J. M. Upton, 56 The Causeway, Petersfield, Hants, GU31 4JS; phone Petersfield 4583.

... **NEW FOREST AS** have decided to withdraw from the three-club Inter-club Competition. Table shows will still be arranged with the clubs concerned but not on a league basis. A former club member Mr G. Derby gave a very interesting show of coloured slides on setting up and servicing a furnished aquarium.

Mr M. Aust won 1st, 2nd and 3rd places in the barbs class of a very well supported table show with the show bench full of fish. Mr D. Harding won in the platy class.

... **ONCE** again Mr R. Dawes of **WEDNESBURY & DAS** very kindly substituted for an absent speaker. He explained, to a good turnout of members, the show rules of the Society. There were quite a few new members and they found it extremely helpful to their new-found hobby. Mr J. Reeves won 1st & 3rd in the cichlids class A in the table show and 1st, 2nd & 3rd in the rasboras class. The best fish in show was a *Coleus labiosa* entered by Mrs J. Johnson (novice a.v.), and Mr R. Law won in the cichlids class B.

THE FANCY GUPPY ASSOCIATION was once again represented at the BAF by a stand put on by the **MANCHESTER** section. It attracted great interest and also some of the prizes, notably first three places in the single guppy class, 1st & 3rd in pairs livebearers and a 2nd in the society furnished—a very worthwhile result for all the hard work put in by the members. If anyone would like to join this band of keen guppy addicts, the venue is Longsight Hotel, rear entrance to Belle Vue, on 1st Sunday of month commencing 2.30 p.m.

Dates for Your Diary

17th March, **CATERHILL ASSOCIATION (G.B.)** Open Show, Haas Hall, Haas Close, Haas, Richmond, Surrey. Lighten classes (G & H). Show secretary: Mr D. Lamburn, 2 Wheeler Court, Plough Road, London, SW11 2AJ (phone: 01-223 2522).

17th March, **RIVERSIDE AS** Open Show, St. Servanus Church Hall, Colindale Road, London, W.9. Details: Mr W. Northwell, 15 Greyhound Road, Fulham, London, S.W.6.

17th April, **NELSON AS** Open Show, Civic Centre, Stander Street, Nelson. Details: Mr H. Hingworth, 94 Barnroch Road, Colby, Lancs.

17th April (Easter Monday), **SOUTHAMPTON AS** Open Show, Avenue Hall, Southampton. Details: Mr P. Brown, 213 Spring Road, Sholing, Southampton.

17th April, **BLAKEBOROUGH AS** Open Show, J. Blakelborough & Sons, Carrion, River Street, Birds Ryde Lane, Brighton, Yorks. Details: Mr T. Barker, 41-43 Canon Street, Brighton, Yorks, HD7 8UL.

18th April, **COVENTRY POOL & AQUARIUM SOCIETY** Open Show. Further details (s.a.s.) from Mr S. Woodridge, 12 Ridgeway Avenue, Coventry, CV5 9BU.

17th May, **OSRAM AS** Open Show, Recreation Rooms, Refuge Street, Shaw, nr. Oldham, Lancs.

17th May, **SOUTHEND, LEIGH & DAS** Open Show, St. Clements Hall, Leighton Sea, Essex. Club and individual furnished, apparatus and marine classes. Schedule: Mr D. Dymally, 172 Trinity Road, Southend-on-Sea, Essex; phone 82228.

17th May, **GLOUCESTER AS** Open Show, Education and Leisure Centre, Paternock Road, Gloucester. Schedule (February): Mr B. Walker, 41 Hallow Road, Gloucester.

17th May, **YEovil & DAS** Open Show. (Details later.)

17th May, **BRIDLINGTON & DAS** first Open Show, Alexandra Hotel, Bridlington, E. Yorks. Details to follow.

17th May, **COREY & DAS** Open Show, Corby Civic Centre. Details to follow.

17th June, **BRIGHTON & SOUTHERN AS** Open Show & Exhibition, St. Benedict's Church Hall, Sackville Road, Hove.

17th June, **SWILLINGTON AS** Open Show, John Swanton School, Barwick Road, Swarfed, Leeds.

17th June, **BISHOP CLEEVE AS** Open Show. Details to follow.

17th June, **ALBERTON & DAS** Open Show, Adult Education Centre, Alberton Hall, Alberton. Details: Mr R. Hocking, Parkway, 13 Coppice Drive, Eastwood, Nottingham; phone Langley 505 914.

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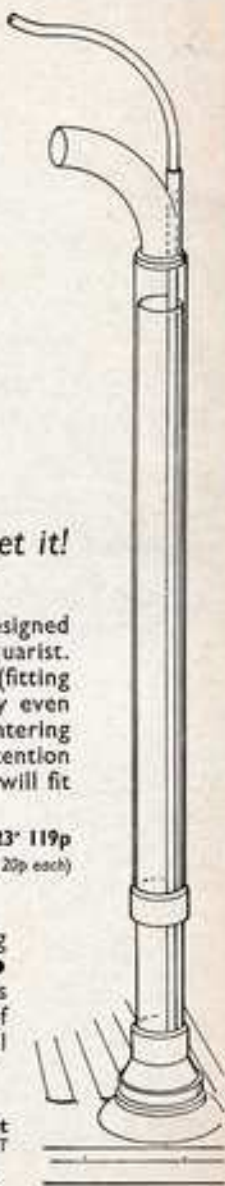
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